REMARKS

This paper is responsive to the Office Action mailed April 16, 2008. Claims 1-20 were pending before submission of this paper. Claims 1, 13, 14 and 17 have been amended. Support for all amended claims can be found in the specification, and no new matter has been added by these amendments. Claims 1-20 are pending and stand rejected. Reconsideration of the claims in view of the amendments and the following remarks is respectfully requested.

Claim Objections

Claims 1, 13, 14 and 17 are objected to because of informalities. In particular, the Office Action states that claims 1, 13, and 14 use the phrase "configured to" that fails to positively recite that the action is actually performed. The Office Action further states that claims 13 and 17 use the phrase "capable of" which fails to positively recite that the action is actually performed. The Office action requires amending the claims to positively recite the actions being performed. Claims 1, 13, 14 and 17 are amended to remove the objected phrases and positively recite the actions being performed.

The Office action suggests changing a limitation, "... the network controller is configured to generate...," as recited in claim 14 to "... generating by the network." Applicants wish to thank the Examiner for the suggestion. However, claim 14 is amended to recite "wherein when a file to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set," which is believed to be proper. Claims 1 and 13 are amended in a similar manner.

Accordingly, the objection of claims 1, 13, 14 and 17 is respectfully requested to be removed.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cramer et al. (U.S. Patent No 6,920,580, *Cramer*) in view of Schultz et al. (U.S. Patent Application No 2003/0145130, *Schultz*). Applicants respectfully submit that these references do not teach or suggest each element of these claims.

For example, Applicants' claim 1 as amended recites a disc controller comprising:

> a network controlling unit to receive a data input/output request sent from an external device through a network; and
>
> a disc controlling unit formed in a same circuit board in which the network controlling unit is formed, the disc controlling unit coupled to the network controlling unit by an internal bus provided in the circuit board,
>
> wherein the disc controlling unit receives a command sent from the network controlling unit through the internal bus and execute a data input/output for a disc drive in response to the command;
>
> wherein the network controlling unit sends the command, for which a plurality of addresses are set, to the disc controlling unit;
>
> wherein the disc controlling unit receives the command and execute data input/output corresponding to each of the addresses set in the command for the disc drive; and
>
> wherein when a file to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set, and
>
> wherein when the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and one logical address for a designating respective storage area are set (emphasis added).

Such limitations are neither taught nor suggested by these references. As discussed in Applicants' specification, advantages are obtained by providing a network controlling unit and a disc controlling unit in/on the same circuit board, whereby the components can communicate using a bus of the circuit board so that the components can execute "a highly flexible transmission to each other without restriction due to difference in protocol" (paragraphs

[0009]; [0030]-[0032]). Further, the network controlling unit generates a single command based on a data input/output request and file management information. The data input/output request includes a file name, in-file offset address, and size. Such information is used in the file management information to determine the number of data areas indicating the number of divisions, etc. Based on the data input/output request, the network controlling unit generates a single command in which "a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set" when "a file to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive" (see also paragraphs [0063]-[0068]) or a single command in which "a combination of a number of blocks and one logical address for designating respective storage area are set" when "the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disc drive." (See paragraph [0062]) That is, a single command is generated for the data corresponding to one file that is sometimes stored in a continuous storage area collectively on one disc drive, or alternatively sometimes is stored in the several storage areas separately. (See paragraph [0061]) A single command has a great advantage over a plurality of commands for the data since the plurality of commands results in a larger overhead for transmission and a lower performance of the overall storage system (paragraphs [0033]; [0083]).

The Office Action states that "Cramer discloses information stored in hard disk (see column 6 lines 17-20) and RAID arrays (see column 6 lines 11-16), indicating dividing an storing I/O request in a plurality of storage area of a disk drive." (Office Action, page 4). The Office Action further states that column 6, lines 17-20 of *Cramer* implies that a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage area are set.

Column 6, lines 8-20 of *Cramer* reads as follows:

> The filer also includes storage operating system 230 stored in memory 204 that implements a file system to logically organize information stored as a hierarchical structure of directories and files on the disks in an assigned disk shelf 212. Disks in the disk shelf are typically organized as a

> RAID 4 (Redundant Arrays of Inexpensive Disks) array to protect against data loss caused by disk failure in a manner well known in the art. RAID arrays also improve data availability because a filer can continue operation even with a single failed disk.
>
> Storage adapter 206 cooperates with storage operating system 230 executing on processor 202 to access stored information requested by a client 10, which information is stored on hard disks 216. (emphasis added)

Although it is not clear from the Office Action, it seems that the Office Action asserts *Cramer* teaches a single command in which "a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set" as claimed, since block data stripping is used in a write command for a RAID (Redundant Arrays of Inexpensive Disks) 4 system (array).

However, data stripping used in the RAID 4 system is fundamentally different from generating "[a] command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set," if a file to be processed "is to be divided and stored in a plurality of storage areas of a disc drive" and "[a] command in which a combination of a number of blocks and one logical address for a designating respective storage area are set" if a file to be processed "is to be stored in a continuous storage area of a disc drive," as claimed in Applicants' claim 1.

As disclosed in the above-cited passages, the RAID 4 array is used "to protect against data loss caused by disk failure in a manner well known in the art" in *Cramer*. It is well known in the art that, in a RAID 4 system, data to be written is divided into several data blocks and each data block is distributed among the RAID group along with an extra parity block. Thus, if "the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disc drive" as claimed, it defeats the very purpose of using the RAID 4 array, namely distributing data blocks among disk drives for fault recovery.

In this regard, *Cramer* simply utilizes data stripping to distribute data blocks among disk drives, but fails to disclose or suggest at least "the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided

storage areas are set" is generated "when a file to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive" and "the command in which a combination of a number of blocks and one logical address for a designating respective storage area are set" is generated "when the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disc drive" as claimed.

Another reference, *Schultz* does not remedy the defects of *Cramer* since *Schultz* is directed to ensuring that each controller in a storage system has the same firmware version, and accomplishes this by transmitting version information between the controllers, and if one controller is found to have an older version, copying over the newer version from one of the other controllers (paragraphs [0030]-[0036]).

Applicants respectfully assert that none of the references, alone or in combination, teaches or suggests a network controlling unit that generates a single command as claimed. Thus, even if for sake of argument there were motivation to combine these references, the combination of *Schultz* and *Cramer* would not teach or suggest all limitations of Applicants' claim 1.

Accordingly, these references cannot render obvious Applicants' claim 1, or the claims that depend therefrom, individually or in combination. Further, as these references are directed to solving different problems in different systems, there would be no motivation to provide such features. The other claims recite limitations that similarly are not rendered obvious by these references, for reasons including those set forth above. Applicants therefore respectfully request that the obviousness rejections with respect to these claims be withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

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